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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,745	03/08/2004	Changqing Shi	HIT1P071/HSJ920030273US1	2507
50535	7590	06/27/2006	EXAMINER	
ZILKA-KOTAB, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			KLIMOWICZ, WILLIAM JOSEPH	
			ART UNIT	PAPER NUMBER
			2627	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/796,745

Applicant(s)

SHI ET AL.

Examiner

William J. Klimowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-14 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because the lead line for designator **106** is not shown in Figure 1. The lead line should direct the designator **106** to the thin layer between layers **104** and **110**.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 5, 12, 15 and 18 are objected to because of the following informalities:

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With regard to claim 5, line 1, the phrase “magnetoresistive sensor” should be changed to the phrase --magnetic head-- in order to remain consistent with the preceding claim preamble.

With regard to claim 15, a period should replace the semicolon at the end of the claim language.

With regard to claim 18, a period should be placed at the end of the claim.

Appropriate correction is required.

Claim 12 is objected to because of the following informalities and appropriate correction is required.

The following phrase(s) lack clear antecedent basis within the claim(s), i.e., either the particularly recited passage fails to be properly introduced prior to its appearance at that point in the claim or the structure recited in the passage is not an inherent part of or component of the previously recited structure. The lack of antecedence as noted *infra*, is merely formal, since the claims can be understood in light of the instant specification and drawings; the antecedence informalities delineated below do not rise to the level of a rejection under 35 USC 112 2<sup>nd</sup> paragraph:

(i) Claim 12 (line 1), “said dielectric layer.”

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Vinal et al. (US 4,816,947).

As per claim 1, Vinal et al. (US 4,816,947) discloses a magnetic head (e.g., FIGS. 1, 4), comprising: a magnetoresistive sensor (3) including a ferromagnetic free layer having first and second laterally opposed ends right and left ends of sensor (3A, 3B), and an electromagnet (10A, 10B, 11A, 11B) having first and second pole ends adjacent said first and second laterally opposed ends of said free layer (cf. FIGS. 1, 4 with FIG. 2) for biasing a magnetization of said ferromagnetic free layer (3) in a predetermined direction - see FIG. 4.

As per claim 2, wherein said electromagnet (10A, 10B, 11A, 11B) further includes: a magnetic yoke (10A, 10B); and an electrically conductive coil (11A, 11B) formed about a portion of said yoke (10A, 10B).

As per claim 3, wherein said yoke (10A, 10B) is formed with a gap (portion of (10A, 10B) in flux contact with ferrite substrate (1)) to prevent electrical current from flowing through said yoke (10A, 10B) from said first pole end to said second pole end.

As per claim 4, further comprising first and second electrically conductive "leads" (portions of (11A, 11B) formed over (10A, 10B)) formed over said yoke (10A, 10B).

As per claim 5, wherein said yoke (10A, 10B) includes first and second portions separated by said gap (i.e., space between distal ends of cores (10A, 10B)) and further comprising first and second electrically conductive leads (portions of (11A, 11B) formed over (10A, 10B)) formed over said first and second portions respectively of said yoke.

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As per claim 6 (and also claim 19 and claim 20, rejected *infra*), Vinal et al. (US 4,816,947) discloses the magnetic head, comprising: a magnetoresistive sensor (3) having first and second laterally opposed sides (adjacent (10A, 10B)); a first magnetic layer (10A) having an end abutting said first side of said magnetoresistive sensor (3), and extending from said sensor (3); a second magnetic layer (10B) having an end abutting said second side of said magnetoresistive sensor (3), and extending from said sensor (3); and an electrically conductive coil (11A, 11B) formed about a portion of at least one of said first and second magnetic layers (10A, 10B).

As per claim 7, comprising: first and second electrically conductive leads (11A, 11B) formed over said first and second magnetic layers (10A, 10B) respectively.

As per claim 8, wherein said coil (11A, 11B) comprises: a first set of parallel electrically conductive lines formed at a first elevation (at 13A, 13B- see FIG. 3); a second set of parallel electrically conductive lines formed at a second elevation (at 11A, 11B - see FIG. 3); and a set of electrically conductive vias electrically connecting at least a portion of said first electrically conductive lines with said second set of electrically conductive lines (provided such that the coils can wind around the cores (10A, 10B as seen in FIG. 1).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vinal et al. (US 4,816,947).

See the description of Vinal et al. (US 4,816,947), *supra*.

As per claims 15 and 17, Vinal et al. (US 4,816,947) remains silent with respect to wherein said yoke comprises soft magnetic material, or wherein as per claim 16, said yoke comprises a material selected from the group consisting of NiFe, FeXN (where X is Al, Ta or Co), CoFe, Sendust, CZT or CZN, or wherein said first and second magnetic layer comprise NiFe, as per claim 18.

Official notice is taken that magnetically permeable yokes of the type utilized by Vinal et al. (US 4,816,947) for conducting magnetic flux, made of the soft materials set forth in claims 15-18 are notoriously old and well known and ubiquitous in the art; such Officially noticed fact being capable of instant and unquestionable demonstration as being well-known.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the magnetically permeable core members (10A, 10B) of Vinal et al. (US 4,816,947) as comprising soft magnetic material, as per claims 15 or 17, or wherein as per claim 16, the yoke comprises a material selected from the group consisting of NiFe, FeXN (where X is Al, Ta or Co), CoFe, Sendust, CZT or CZN, or wherein said first and second magnetic layer comprise NiFe, as per claim 18.

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the magnetically permeable core members (10A, 10B) of Vinal et al. (US 4,816,947) as comprising soft magnetic material, as per claims 15 or 17, or wherein as per claim 16, the yoke

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comprises a material selected from the group consisting of NiFe, FeXN (where X is Al, Ta or Co), CoFe, Sendust, CZT or CZN, or wherein said first and second magnetic layer comprise NiFe, as per claim 18, in order to provide a readily available and widely known soft magnetic material having outstanding flux conductivity and low coercivity, as is well known, established and appreciated in the art.

Additionally, as per claim 19, although Vinal et al. (US 4,816,947) remains silent with respect to a magnetic data storage system, comprising: a magnetic disk a motor connected with said disk for rotating said disk; a slider; an actuator connected with said slider for moving said slider relative to said disk, or as per claim 20, a magnetic tape and a motor for moving said magnetic tape, Official notice is taken that such conventional magnetic system structures are notoriously old and well known and ubiquitous in the art; such Officially noticed fact being capable of instant and unquestionable demonstration as being well-known.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the magnetic head as taught and suggested by Vinal et al. (US 4,816,947) into a conventional magnetic system, as set forth in either of claim 19 or claim 20.

The rationale is as follows: one of ordinary skill in the art would have been motivated to have provided the magnetic head as taught and suggested by Vinal et al. (US 4,816,947) into a conventional magnetic system, as set forth in either of claim 19 or claim 20 in order to provide the advantages of such a magnetic head, as espoused by Vinal et al. (US 4,816,947) - see advantages set forth in abstract of Vinal et al. (US 4,816,947)- , in its intended operating environment, either of a conventional magnetic disk system as set forth in claim 19 or conventional tape system as set forth in claim 20.



***Allowable Subject Matter***

Claims 9-14 are currently allowed over the applied prior art.

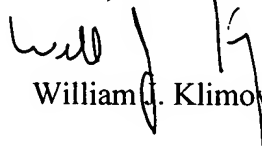
***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (571) 272-7577. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
William J. Klimowicz

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A handwritten signature in black ink, appearing to be 'WJK', with a stylized, cursive script.

Primary Examiner  
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WJK